STRATEGIC ENERGY MANAGEMENT PLAN FOR HALTON HEALTHCARE SERVICES 2014 - 2015

Georgetown Hospital

Milton Hospital

Oakville Trafalgar Memorial Hospital
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INTRODUCTION

The overall purpose of Halton Healthcare Services energy management plan and policies is to promote good stewardship of our environment and community resources. In keeping with our core values of Efficiency and Financial Responsibility, Halton Healthcare Services has recently engaged the services of an experienced Energy partner and together we are exploring the viability of energy conservation measures which will ultimately result in reduced operating costs and renewed infrastructure to enable the Hospital to provide compassionate service to a greater number of persons in the community. In 2015, the Oakville Trafalgar site of Halton Healthcare Services will move to a brand new state of the art LEED silver building located at 3000 Third Line. Planning in terms of energy conservation is therefore focused on the Milton and Georgetown sites of Halton Healthcare Services.

Milton District Hospital

The Milton Hospital consists of a single facility that was built up in stages since the original building was sited in 1959. A second storey addition was completed in 1966 that topped half of the original building. In 1985 a significant 2-storey addition was built on the south end of the existing facility. In 2007, a 2,500 square foot addition was added for a Diagnostic Imaging. The entire facility now encompasses 155,700 square feet of conditioned space.

- Milton’s utility and energy related costs are a significant part of overall operating costs
  - Utility costs in the 2012 fiscal year were $619,449.
  - The Milton Hospital’s Energy Use Index (EUI) was 230.90 ekbtu/ft²
  - Facility related O&M costs are $985,000 annually
  - Facility capital project costs are projected at $620,000 over 5 years

- With energy management an integral part of business decisions, Halton Healthcare Services through its partnership is anticipating the following:
  - 352kW (Electricity) 87,834m³ (Natural Gas) reduction in energy use, with an overall reduction of in utility use and costs
  - $93,000 plus in savings annually to Utilities & O&M to the bottom line
  - Energy investments will get a 10.8% internal rate of return (IRR)

The Georgetown Hospital complex consists of two (2) distinct facilities with differing operations. The Hospital is an acute-care community hospital with 33 beds. This facility is connected to the Bennett Center, a long-term/complex care facility with 25 beds. The two facilities are connected by an enclosed walkway known as the “Tunnel”. The hospital was first constructed in 1961 and expanded in 1972 with a 9,000 square foot
addition. The Hospital as it stands now is a single story building encompassing 56,700 square feet, the Bennett Centre is 75,000 square feet.

- Georgetown’s utility and energy related costs are a significant part of overall operating costs
  - Utility costs in the 2012 fiscal year were $604,320
  - The Hospital’s Energy Use Index (EUI) was 219.14ekbtu/ft2
  - Facility related O&M costs are $930,00 annually
  - Facility capital project costs are projected at $1.7 million over 5 years

- With energy management an integral part of business decisions, Halton Healthcare Services through its partnership is anticipating the following:
  - 687KW (Electricity) & 125,721m3 (Natural Gas) reduction in energy use, with an overall reduction of in utility use and costs
  - $138,000 plus in savings annually in Utilities & O&M to the bottom line
  - Energy investments will get a 10.8% internal rate of return (IRR)

- Recent activity associated with managing energy costs include the following:
  - 2008 HHS looked into continuously ways to reduce hydro consumption and costs while maintaining continuous and uninterrupted power supply. Joining ECNG Energy Management Partners, through Healthpro, resulted in hydro cost avoidance and expect to continue this trend for the following two years.
  - 2009 HHS continued looking for ways to minimize energy consumption and costs while maintaining continuous and uninterrupted power supply. As part of ECNG Energy Management Partners, through Healthpro, HHS realizes energy cost avoidance, as well as a seasoned partner in managing the increasing electricity consumption.
  - 2009 HHS continued moving forward with energy savings initiatives, further measures were taken to minimize energy consumption at all three sites. A Boiler Feasibility Study was completed at OTMH, addressing boiler control upgrades and replacement of the existing domestic hot water tanks with
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instantaneous heaters. The Insta-heat hot water systems eliminated the storage of stagnant hot water, therefore eliminating the risk of legionella and through the decommissioning of the existing hot water storage tanks significant space was freed up to utilize for storage of medical equipment of the in-patient units. This will have the added benefit of improving Fire Safety throughout the in-patient units.

- 2010 HHS received two gold and a silver award from the Recycling Council of Ontario in the Facilities Management category for Georgetown Hospital (GH), Milton District Hospital (MDH) and Oakville Trafalgar Memorial Hospital (OTMH), respectively. HHS reduced greenhouse gas emissions by 1,650 tonnes of eCO₂ or equivalent to 500 midsize cars enough to fill the Oakville multilevel parking garage. This award places HHS among industry leaders who excel in sustainable facility operations, energy savings and waste diversion.

- 2011 HHS was recognized by Greening Health Care, a program which helps hospitals work together to lower their energy and operating costs (electricity, natural gas & green house gas emissions) while contributing to the health and well-being of their communities. Two recognition plaques were presented in recognition of energy savings in Oakville and Georgetown of greater than 5% for the period 2009-2011. In Georgetown there was total energy savings of 9.7%, natural gas savings of 12.6% and greenhouse gas emissions (GHG) savings of 10.9%. Savings were achieved by changing from supplying boilers with cold softened water to hot softened water and increasing supply air temperatures to the ventilation system during the summer months in keeping with American Society of Heating Refrigeration and Air Conditioning Engineering (ASHRAE) standards.

- 2011 In the same period OTMH saw total energy savings of 9.1%, electricity savings of 9.8%, natural gas savings of 8.6% and GHG savings of 7.9%. Savings were achieved by installing modulating controls on boilers which results in more efficient operation at a lower rate of fire and the maintenance of constant control. Natural gas savings were attributed to a decrease in the operating steam pressure from 140psi to 110psi, in keeping with ASHRAE standards. Supply air temperatures were raised in the evenings when the occupancy of areas was lower which resulted in less demand on our heating system. HHS received a $4,000.00 rebate cheque, in November 2012, from Union Gas for our implementation of these changes. The savings helped to offset substantial increases in Provincial debt reduction charges which have been increasing substantially year over year. HHS has been maintaining these changes and looking at developing additional strategies to decrease our energy consumption at all 3 sites in preparation for new sustainability requirements coming into effect in 2013 through the implementation of ONT Reg 397 11.

- 2013 OHA Hospital Scorecard Survey participation & benchmarking report
• In 2013 HHS participated in the Ontario Hospital Association (OHA) Green Hospital Scorecard. This scorecard is benchmark program with five categories: Energy, Water, Waste, and Pollution Prevention & Corporate Leadership. HHS received a Bronze score at our Georgetown, Milton & Oakville Trafalgar sites. HHS will be participating in 2014.

• 2013 HHS worked with both Milton Hydro & Halton Hills Hydro to have an Energy Conservation Assessment completed on both our hospitals identifying areas where energy savings can be made through some capital renewal programs.

• 2014 A recently completed Energy & Facility Renewal Report was completed for Milton District Hospital & Georgetown Hospital.

• 2014 ‘saveONenergy’ Retrofit Program application & approval by Halton Hill Hydro for the replacement of a chiller.

• To further strengthen and obtain full value from energy management activities, a strategic approach will be taken: the organization will fully integrate energy management into its business decision-making, policies, and operating procedures with full support of the board of directors.

• Active management of energy related costs and risks in this manner will provide a significant economic return to the organization and will support other key organizational objectives.

Energy Management Vision

Halton Healthcare Services mission statement is

We are committed to providing quality, compassionate care and services to meet the diverse needs of our population in a timely and effective manner.

We will constantly seek innovations to improve our ability to deliver care and services and to be leaders in working towards a healthier community.

Therefore, we consider our facilities a primary source of giving care and an integral part of the healing environment. Key to this equation is the ability to use our facilities efficiently and effectively. This results in Halton Healthcare Services being able to direct more resources toward patient care. Not only that, but by reducing our environmental footprint, we are also doing our part to create a healthier environment. Something that is essential to the people we serve and that which helps them to lead healthier lives.

So Halton Healthcare Services energy management vision is to eliminate energy waste, wherever possible, through infrastructure improvement, through policy and process changes, and through the embracing of best practice and technology changes.
Guiding Principles for Strategic Energy Management

Halton Healthcare Services’s energy management plan will be guided by these principles:

Taking A Strategic Approach: While Halton Healthcare Services actively manages energy and utility costs by implementing opportunities as they are identified, by acting strategically, the Hospital can significantly improve its energy-related performance. Internalizing energy and utility management into our organization’s every-day decision-making, policies, and operating procedures will help assure substantial and long-lasting reductions in energy use throughout Halton Healthcare Services.

Supporting Mission-Critical Goals: Strategic energy management will directly support Halton Healthcare Services mission-critical goals of caring for the environment and the community. It will also help the Hospital to optimize the healing and working environment; improve the hospital’s financial bottom line by reducing unnecessary energy and utility costs; and optimize the capacity of existing energy systems to meet current and expanding operational needs. The impacts of Halton Healthcare Services energy management efforts on those goals will be tracked and reported wherever possible.

Pursuing Long-Term Change to Core Business Practices: The core of a strategic approach is the consistent incorporation of energy and utility management into our organization’s core practices and decision making, such as the strategic planning and budgeting processes. Change in energy-related business practice will cover all applications of energy management – new construction and major renovations, existing facility operations and upgrades, and economic analysis and procurement practices.

Fostering Organizational Commitment and Involvement: Executive and organizational commitment and involvement is critical to successful strategic energy management. Upper management at Halton Healthcare Services will work with facility managers and other key staff to ensure that adequate organizational support and resources are provided to maximize the benefits of energy and utility management. Energy and utility management will be integrated into the strategic planning and capital budgeting processes.

Obtaining Solid Economic Returns: Energy management investments will yield solid economic returns that meet Halton Healthcare Services expectations on Internal Rate of Return and Return on Investment. Halton Healthcare Services will apply consistent financial analysis methods that consider life-cycle costs that reduce total cost of facility ownership and operation.
Using Available Resources and Assistance: Halton Healthcare Services will use national, regional, and local sources of strategic, technical, and financial assistance to help achieve our energy management goals. These include programs through local distribution companies, the Ontario Power Authority, ENERGYSTAR, saveONenergy, the Canadian Coalition for Green Health Care, The Canadian Healthcare Engineering Society, and EnerCan.

The Business Case for Strategic Energy Management

Below are the central business arguments for Halton Healthcare Services pursuit of strategic energy management. Section VI then presents the business proposition – the results of analysis of the energy efficiency opportunities and their associated costs and internal rate of return.

Strengthened Community Leadership and Environmental Stewardship
Energy management is a visible, public commitment to the community and environment. Through aggressive energy management, Halton Healthcare Services can provide leadership in promoting sustainable communities, efficient business practices, and environmental stewardship. This is an excellent opportunity to provide leadership and reduce costs at the same time.

Enhanced Healing and Working Environment
In existing facilities, efficient operating practices improve patient as well as employee comfort with more stable air temperature, better indoor air quality, and lighting. By way of an example, recent research has found that daylight eases surgical pain and contributes to substantial savings in pharmaceutical costs.

Improved Financial Health and Operating Cost Reduction
Strategic energy management presents a highly leveraged opportunity to reduce operating costs and positively impact Halton Healthcare Services bottom line. Dollars of operating cost savings directly improve the operating margin. Further, investments in energy projects typically have a lower risk of performance over time relative to other investments and savings from energy projects are easier to forecast reliably than savings or revenue increases expected from more variable types of investment.

Optimization of Capacity to Meet Current and Expanding Operational Needs
Energy efficiency optimizes overall equipment/system operation so that system capacity can be reclaimed for current and expanding operational needs. This “free capacity” can eliminate the need to add major new infrastructure is far less expensive.
Business Proposition

- If energy management considerations are integral to relevant business practices, policies, procedures, and decision-making processes, Halton Healthcare Services energy and utility related costs can be reduced by an additional 10% over a 5-year period.

- Based on 2012 utility rates, proceeding with an energy project will result in $230,000 annual base line savings of both utilities & operations & maintenance at both Georgetown Hospital ($930,000 annually) & Milton District Hospital ($93,000) combined over a 5-year period. Integration of energy management into organizational decision making and business practices will continue to produce value annually for a much longer period of time.

- To support the achievement of these financial benefits, Halton Healthcare Services will invest in energy-related capital and operating improvements, meeting an Internal Rate of Return (IRR) that is acceptable to its Board of Directors and Executive Officers.

- To support the energy management program for our Georgetown & Milton hospitals, Oakville Trafalgar hospitals wasn’t included as Halton Healthcare Services will be vacating the existing site in December 2015 to move into the new Oakville Trafalgar hospital. Halton Healthcare has completed an Energy & Facility Renewal Report, at both Georgetown & Milton Hospitals, collecting data to establish a project baseline to measure against for tracking, measuring and reporting energy conservation measure performance against baselines. The objective of this partnership is to reduce energy use for the hospitals, while improving the quality and comfort conditions of the hospitals. Halton Healthcare is exploring an energy project, with an Energy Management service company to complete the suggested projects that were identified in the Energy & Facilities Renewal Project.

Energy Management Goals

The following outlines some of the energy management goals that will be adopted by Halton Healthcare Services. They include, but are not limited to, the following:

- ECM Approval, Resources to Implement
- Implement Strategic Energy Management Practices
- Purchasing/Procurement Procedures and Specifications
- Enhanced Design & Construction Practices
- Enhanced Facility Operating Practices
- Cost-Effective Facility Upgrades
Goal: ECM Approval, Resources to Implement

- Executive approval process adjustments and resource allocations to support initiatives.
- Support from key staff (financial management, purchasing/procurement, construction, building operations, etc.).
- Creation of mechanisms/processes to make resources available.
- Clarification and communication of staff roles and responsibilities, performance goals, and energy management reporting.

Goal: Establish Purchasing Specifications for Energy Efficient Equipment and Services

- Establish and consistently use purchasing specifications that minimize life-cycle costs for energy efficient equipment and services.
- Establish efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and unitary HVAC equipment).
- Establish efficiency guidelines that apply LCCA for custom equipment purchases (e.g. chillers).
- Establish efficiency standards for design and construction, and for building operations and maintenance services.

Goal: Implement Enhanced Design & Construction (D&C) Practices

- Implement improved new construction practices in all capital projects that specify early team collaboration and "integrated design" (ID).
- Integrated design required for funding.
- RFPs, contract terms & conditions, & fee structures will support ID.
- Apply established purchasing procedures and specifications.
- Include incentives and tax credits wherever available.
- Educate all owner’s project managers or construction managers and contractors on integrated design and their respective roles in master planning pre-design, design, construction, testing, commissioning, and monitoring.
- Set and meet clear energy performance targets for new build projects; measure and improve over time.
  - Establish baseline for measuring performance goals (e.g. code, or national reference standards like ASHRAE 90.1).
  - Set targets.
  - Measure performance and improve over time.
Specify commissioning as a standard procedure.
- Retain the services of an independent third-party commissioning agent.
- 100 percent of fundamental building systems and elements will be designed, installed, and calibrated to operate as designed.
- Design team, commissioning agent, and building operators will work closely throughout the design process and occupancy to ensure good transition.

Goal: Improve Building Operating Performance

- Equipment tune-up and improved operations and maintenance (O&M) will achieve the following results while supporting patient care, and facility comfort and safety at Georgetown & Milton Hospitals.
  - Achieve reductions in electricity utility operating costs for existing facilities by an average of 12% over the next 5 if HHS embarks on the Energy & Facility Renewal at both Georgetown and Milton combined.
  - Reduce the system-wide EUI from 450 Btu/ft² to 132 Btu/ft² by 2015. The EUI will be adjusted for variances in patient days and IT intensity.
  - Reduce energy electricity consumption by 1,084,000 kWh per year equivalent to yearly savings of $122,200 at 2012 rates, combines Georgetown & Milton hospitals.

Goal: Implement Cost-Effective Facility Upgrades

- Implement equipment and system upgrades where justified by life-cycle cost analysis.
- Expand use of qualified service providers as needed. Develop standard RFP documents, contract terms, and reporting standards.

Goal: Actively Manage Energy & Utility Commodities

- Minimize utility costs and exposure to market risks. Utility costs include natural gas, electricity, water, and sewer.
- Participate in the energy/utility regulatory process.

Goal: Monitor, Track, and Reward Progress

- Track progress on Strategic Energy Master Plan
- Track energy reductions monthly and report annually.
- Reward staff for successes.
**Baseline Energy Use**

The baseline energy profile has been selected using the most recent full fiscal year with available utility data, which is 2012. This baseline was used to calibrate energy end-use estimates and as the reference case for calculating energy savings. Exhibit 1 presents the baseline energy use and costs; Exhibits 3, 4, and 5 present the data in graphic format.

**Key Observations:**

A review of the baseline energy cost profile reveals that:

**Georgetown:**

The total annual utility costs for the Georgetown site in 2012 were $605,980. Electricity represents the largest cost at $397,264 (65% of total cost), natural gas costs were $127,243 (21% of total cost), and water costs were $81,473 (14% of total cost).

The annual electrical consumption is 3587MWh, and the annual gas consumption is 6356 eMWh, resulting in a total site energy intensity of 63.8 ekWh/ft$^2$/yr. This places Halton Healthcare Services 19% above the average of 53.7 ekWh/ft$^2$/yr based on an average of similar facilities in Ontario$^1$.

The water use intensity is 253 L/ft$^2$.

**Milton:**

The total annual utility costs for the Milton site in 2012 were $621,182. Electricity represents the largest cost at $446,020 (72% of total cost), natural gas costs were $122,620 (20% of total cost), and water costs were $52,541 (8% of total cost).

The annual electrical consumption is 4270MWh, and the annual gas consumption is 6210eMWh, resulting in a total site energy intensity of 67.3 ekWh/ft$^2$/yr. This places Halton Healthcare Services 25% above the average of 53.7 ekWh/ft$^2$/yr based on an average of similar facilities in Ontario$^2$.

The natural gas consumption in Milton is the reason that the overall site energy intensity is higher than the benchmark. Natural gas use is 39.89% higher than the average.

The water use intensity is 145L/ft$^2$. 


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$^1$ Average of similar facilities in Ontario.

$^2$ Average of similar facilities in Ontario.
OTMH:

The total annual utility costs for the OTMH site in 2012 were $2,123,928. Electricity represents the largest cost at $1,477,802 (70% of total cost), natural gas costs were $358,072 (17% of total cost), and water costs were $288,052 (13% of total cost).

The annual electrical consumption is 14083MWh, and the annual gas consumption is 19255eMWh, resulting in a total site energy intensity of 70ekWh/ft²/yr. This places Halton Healthcare Services 30% above the average of 53.7 ekWh/ft²/yr based on an average of similar facilities in Ontario³.

The natural gas consumption is the reason that the overall site energy intensity is higher than the benchmark.

The water use intensity is 300 L/ft², Halton Healthcare Services is a member of Greening Health Care and below is our

Benchmarking comparison to 48 other hospitals the graph is where HHS’s 3 hospitals are ranked based on 2013 Energy Intensity Per square foot (eKwh/ft²)
Two of the Halton Healthcare hospitals are in the bottom quartile, and Georgetown is just slightly above it. None of these sites changed much in energy during the 2013 year compared to 2012.

**Halton Healthcare Savings Targets** table compares HHS actual 2013 energy use by component with the targets to highlight HOW MUCH energy can be saved, and WHERE the savings are to be found. A description of the kinds of measures associated with these savings is found in the Benchmarking Components listed above. **HHS Actual 2013 Savings** demonstrates how our sites have performed over the past year.

**HHS Savings Targets**

HHS savings targets are based on our actual 2013 energy use, and attainment of top 25% performance for comparable hospitals. Targets are adjusted for weather and site-specific differences.
HHS benchmarking for 2012:

![2012 Total Energy Consumption Benchmark](image-url)
### Exhibit 1 Baseline Energy Consumption

#### 2012 Utilities - Guelph General Hospital Memorial Hospital

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<th>Electricity</th>
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#### 2012 Utilities - Milton District Hospital

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#### 2012 Utilities - Georgetown Hospital

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Exhibit 2 shows the monthly electricity use profile. The majority of the electricity consumption is base load, with a summer peak due to cooling, and a smaller winter extra that is the result of increased pumping energy associated with the heating system.

![Exhibit 2 Baseline Electricity Use Profile](image-url)
Exhibit 3 shows the monthly natural gas use profile. Approximately half of the gas is being used for the base load, and there is a predictable winter increase that corresponds well with the heating demand.

Exhibit 3 Baseline Natural Gas Use Profile
Exhibit 4 shows the monthly water use profile. The majority of the water consumption is base load, but there is an increase in the summer due to cooling loads.

Exhibit 4 Baseline Water Use Profile

OTMH Water Consumption 2012

GH Water Consumption 2012
Energy Benchmarking

Electricity

Below illustrates the electrical energy component distribution. The following identifies to have an electrical impact on base electricity, electric cooling, base thermal & heating thermal:

Electrical:
Energy End Use Breakdown

Energy end-use estimates were calculated using spreadsheet-based tools in conjunction with a review of utility profiles. Specific energy uses that may overlap several categories are explained in their respective sections.
Electricity

Exhibit 5 illustrates the electrical energy end-use distribution. The following end uses shown below were identified to have an electrical impact.

Exhibit 5 Electricity End-Use Breakdown

Georgetown Hospital:

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</tr>
<tr>
<td>Breakdown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>554,317</td>
<td>4.14</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>Fans</td>
<td>1,067,007</td>
<td>7.96</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Pumps</td>
<td>240,535</td>
<td>1.80</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Central Cooling Coils</td>
<td>931,243</td>
<td>6.95</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td>Miscellaneous loads</td>
<td>794,095</td>
<td>5.93</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Totals</td>
<td>3,587,197</td>
<td>26.77</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Observations on Georgetown’s Electrical End-Use Breakdown:

Lighting 15%
Fans 30%
Pumps 7%
Central Cooling Coils 26%
Miscellaneous Loads (Medical equipment, computers, air compressors) 22%

Milton Hospital:

<table>
<thead>
<tr>
<th></th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use</td>
</tr>
<tr>
<td>Existing Energy Use Breakdown</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>474,290</td>
</tr>
<tr>
<td>Fans</td>
<td>1,418,005</td>
</tr>
<tr>
<td>Pumps</td>
<td>478,096</td>
</tr>
<tr>
<td>Central Cooling Coils</td>
<td>711,822</td>
</tr>
<tr>
<td>Miscellaneous loads</td>
<td>1,188,638</td>
</tr>
<tr>
<td>Totals</td>
<td>4,270,851</td>
</tr>
</tbody>
</table>
Building Energy Balance Milton Hospital:

Observations on Milton’s Electrical End-Use Breakdown:
Lighting 11%
Fans 33%
Pumps 11%
Central Cooling Coils 17%
Miscellaneous Loads (Medical equipment, computers, air compressors) 28%

The lighting energy consumption has been based on the lighting fixture count provided by the Halton Healthcare Services. The lighting power density of the facility based on this count is approximately half of what would be expected in a facility of this type. Consequently, the lighting energy consumption is probably twice as high, but this will need to be confirmed by a detailed lighting audit.

Natural Gas

Exhibit 6 illustrates the natural gas energy end-use distribution. The following end uses shown below were identified to impact natural gas use.

Exhibit 6 Natural Gas End-Use Breakdown

Georgetown Hospital:
<table>
<thead>
<tr>
<th></th>
<th>Natural gas</th>
<th></th>
<th>%</th>
<th>ASHRAE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Energy Use Breakdown</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Heating Coils</td>
<td>223,348</td>
<td>17.56</td>
<td>37%</td>
<td>17%</td>
</tr>
<tr>
<td>Space Heating</td>
<td>87,915</td>
<td>6.91</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Reheat or Hot Deck Coils</td>
<td>104,587</td>
<td>8.22</td>
<td>17%</td>
<td>53%</td>
</tr>
<tr>
<td>Domestic hot water services</td>
<td>20,576</td>
<td>1.62</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Miscellaneous loads</td>
<td>163,432</td>
<td>12.85</td>
<td>27%</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>599,858</td>
<td>47.16</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Observations on Georgetown’s Natural Gas End-Use Breakdown:**

Central Heating Coils 37%
Space Heating 15%
Reheat or Hot Deck Coils 17%
Domestic Hot Water Services 3%
Miscellaneous Loads (Sterilization Equipment MDR, Thermal Loads Insulation) 27%

**Milton Hospital:**

![Natural Gas Pie Chart](chart.png)
### Existing Energy Use Breakdown

<table>
<thead>
<tr>
<th>Natural gas</th>
<th>Use</th>
<th>kwh/area</th>
<th>%</th>
<th>ASHRAE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Heating Coils</strong></td>
<td>119,438</td>
<td>8.44</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Humidifiers</strong></td>
<td>57,439</td>
<td>4.06</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td><strong>Space Heating</strong></td>
<td>65,708</td>
<td>4.64</td>
<td>11%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Reheat or Hot Deck Coils</strong></td>
<td>231,789</td>
<td>16.38</td>
<td>39%</td>
<td>53%</td>
</tr>
<tr>
<td><strong>Domestic hot water services</strong></td>
<td>18,222</td>
<td>1.29</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Miscellaneous loads</strong></td>
<td>98,710</td>
<td>6.98</td>
<td>17%</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>591,305</strong></td>
<td><strong>41.80</strong></td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Observations on Milton’s Natural Gas End-Use Breakdown:**
- Central Heating Coils 20%
- Humidifiers 10%
- Space Heating 11%
- Reheat or Hot Deck Coils 39%
- Domestic Hot Water Services 3%
- Miscellaneous Loads (Sterilization Equipment MDR, Thermal Loads Insulation) 17%

### Timeline and Responsibilities for Plan Adoption and Implementation

As mentioned previously in this plan, Halton Healthcare Services has recently concluded an RFP process with a regional partner hospital and the energy proponent has completed a detailed Energy and Facility Renewal Report. These report details opportunities to upgrade infrastructure, conserve energy, reduce operating costs and lessen our impact on the environment.

Energy Conservation Measures currently being considered for inclusion in our five year plan for Milton District Hospital and Georgetown Hospital are:

- Retrofit Fluorescent Fixtures
- Retrofit Potlights by LED Kit
- Group Relamp with Screw-in LED Lamps
- Upgrade with New Fixtures
- Install Occupancy & Daylighting Controls
- Controls Recommissioning
- Expand Building Automations System (BAS)
- Scheduling Air Handling Units
- Install Zone Dampers
- Kitchen Demand Ventilation
- Install VFD in HW and CHW pumps
- Piping Insulation
- Building Envelope Seal Leaks
Cost Saving Measures for Future Consideration are:

- Upgrade Outdoor Lighting with New LED Fixtures
- Recommissioning Controls
- Upgrade Room Temperature Controls
- Kitchen Demand Ventilation
- Install VFD in HW and CHW pumps
- Install New AHU
- Install HW Heating Boilers
- Boiler Plant Efficiency Improvement
- IT Measures
- Water Conservation Measures

The project parameters are currently being analyzed and the expectation is that HHS will move forward with an energy project in the fall of 2014.